

IN THE CLAIMS:

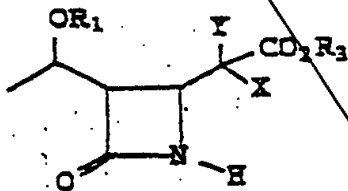
Please amend the claims as follows:

Page 43, line 1; change "[claims]" to --What Is Claimed Is--.

Please cancel claims 2-14 without prejudice.

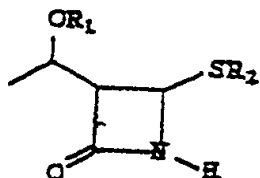
Please add the following new claims:

17 15. A process for synthesizing a 4-substituted azetidinone derivative represented by the formula (3):



(3)

which comprises reacting an azetidinone derivative represented by the formula (1):



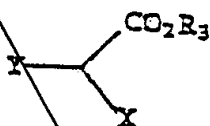
(1)

wherein OR<sub>1</sub> is a protected hydroxyl group; R<sub>2</sub> is a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl

group or a substituted or unsubstituted aromatic group, in the presence of

(a) a copper compound[s] selected from the group consisting of copper oxides, copper halides, salts of copper with organic carboxylic acids, salts of copper with mineral acids and complexes of cuprous halides, or

(b) a mixture of zinc with at least one of said copper compounds with an ester compound represented by the formula (2):



(2)

wherein  $\text{CO}_2\text{R}_3$  is an esterified carboxyl group selected from the group consisting of tri-substituted silyl esters, tri-substituted silyl lower alkyl esters, aromatic heterocyclic esters, lower alkyl esters, lower alkanoyloxy lower alkyl esters, lower alkanesulfonyl lower alkyl esters, mono or di or tri halo lower alkyl esters, lower alkoxy carbonyloxy lower alkyl esters, phthalidylidene lower alkyl esters, 5-lower alkyl-2-oxo-1, 3-dioxolene-4-yl lower alkyl esters, lower alkenyl esters, lower alkynyl esters, aryl lower alkyl esters, aryl esters and phthalidyl esters which may optionally be substituted;

wherein  $\text{X}$  and  $\text{Y}$  are the same or different and represent individually a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkylthio group, a substituted or unsubstituted alkenylthio group, a substituted or

B<sup>1</sup>  
cont

unsubstituted acyl group, [carboxyl, alkyloxycarbonyl,  
alkenyloxycarbonyl, aralkyloxycarbonyl, aryloxycarbonyl,  
thiocarboxyl, alkylthiocarbonyl, alkenylthiocarbonyl,  
aralkylthiocarbonyl, arylthiocarbonyl, substituted or

AR  
cont

unsubstituted aminocarbonyl groups,) a substituted  
or unsubstituted amino group, a hydrogen atom or a halogen atom,  
or; when taken together with the carbon to which they are  
attached, form a substituted or unsubstituted cycloalkan-2-on-1-yl  
group;

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wherein any substituents on R<sub>1</sub> are selected from the group  
consisting of halogen, lower alkyl, monocyclic or polycyclic  
alkyl, lower alkoxy, carboxyl, amino, nitro, cyano, hydroxy,  
aryl[,] of 6 to 10 carbon atoms and aralkyl groups of 7 to 24  
carbon atoms;

wherein any substituents on R<sub>2</sub> are selected from the group  
consisting of lower alkyl, monocyclic or polycyclic alkyl, lower  
alkoxy, carboxyl, amino, nitro, cyano, hydroxy, aryl of 6 to 10  
carbon atoms, aralkyl of 7 to 24 carbon atoms, heterocyclic, acyl,  
carboxyl, alkyloxycarbonyl, alkenyloxycarbonyl, aralkyloxycarbonyl  
and aryloxycarbonyl groups;

wherein any substituents on X and Y are selected from the  
group consisting of halogen, carboxyl, formyl, nitro, cyano,  
hydroxyl, amino, lower alkyl, monocyclic and polycyclic alkyl,  
lower alkenyl, aryl of 6 to 10 carbon atoms, aralkyl of 7 to 24  
carbon atoms, alkylthio, alkenythio, aralkythio, arylthio,

B' cont  
 alkyloxy, alkenyloxy, aralkyloxy, aryloxy, alkylsulfinyl,  
 alkylsulfonyl, aralkylsulfinyl, aralkylsulfonyl, arylsulfinyl,  
 arylsulfonyl, carbamoyl, carbamoyloxy, imino-lower-alkyl, imino-  
 lower-alkylamino, acyloxy, silyloxy, heterocyclic,  
 heterocyclicthio, heterocyclic-oxy, acyl, { carboxyl,  
 alkyloxycarbonyl, alkenyloxycarbonyl, aralkyloxycarbonyl,  
 aryloxycarbonyl, thiocarboxyl, alkylthiocarbonyl,  
 alkenylthiocarbonyl, aralkylthiocarbonyl, arylthiocarbonyl, and  
 aminocarbonyl groups. }

16. A process as claimed in claim 15 for synthesizing a 4-  
 substituted azetidinone derivative represented by the formula (3),  
 wherein said process <sup>further comprising the steps of</sup> comprises <sup>alkali hydride</sup> treating an ester compound  
 represented by the formula (2) with a metal base to convert to the  
 corresponding metal enolate, followed by reaction with an  
 azetidinone derivative represented by the formula (1) in the  
 presence of a copper compound.

17. A process as claimed in claim 15 wherein the ester  
 compound represented by the formula (2) is a halogenated acetic  
 acid ester, a malonic acid ester, a 2-alkylmalonic acid ester, a  
 2-halogenated malonic acid ester, a 2-alkyl-acylacetic acid ester  
 or a cycloalkan-2-on-1-carboxylic acid ester.